

DECLARATION

As a below named inventor, I declare that:

My residence, post office address and citizenship are as stated below next to my name; I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **LOW COST MANUFACTURE OF OLIGOSACCHARIDES** the specification of which _____ is attached hereto or X was filed on November 17, 1999 as Application No. 09/442,111 and was amended on _____ (if applicable).

I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56. I claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

Country	Application No.	Date of Filing	Priority Claimed Under 35 USC 119

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below:

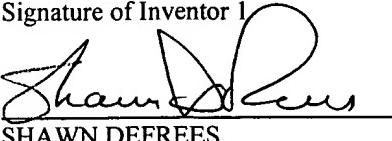
Application No.	Filing Date
60/109,031	Nov. 18, 1998
60/109,096	Nov. 19, 1998

I claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Application No.	Date of Filing	Status

Full Name of Inventor 1:	Last Name: DEFREES	First Name: SHAWN	Middle Name or Initial:
Residence & Citizenship:	City: North Wales	State/Foreign Country: Pennsylvania	Country of Citizenship: USA
Post Office Address:	Post Office Address: 126 Filly Drive	City: North Wales	State/Country: Pennsylvania Postal Code: 19454
Full Name of Inventor 2:	Last Name: JOHNSON	First Name: KARL	Middle Name or Initial:
Residence & Citizenship:	City: Willow Grove	State/Foreign Country: Pennsylvania	Country of Citizenship: USA
Post Office Address:	Post Office Address: 2941 Windsor Avenue	City: Willow Grove	State/Country: Pennsylvania Postal Code: 19090

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signature of Inventor 1  SHAWN DEFREES	Signature of Inventor 2  KARL JOHNSON
Date 2/4/00	Date 2-2-2000

SF 1045095 v1



POWER OF ATTORNEY BY ASSIGNEE

Neose Technologies, Inc. is the Assignee of the invention entitled: LOW COST MANUFACTURE OF OLIGOSACCHARIDES, the specification of which _____ is attached hereto or X was filed on November 17, 1999 as Application Serial No. 09/442,111.

Assignee hereby appoints the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

Timothy L. Smith, Reg. No. 35,367
Ellen Lauver Weber, Reg. No. 32,762
Kevin L. Bastian, Reg. No. 34,774
William M. Smith, Reg. No. 30,223

Send Correspondence to: Timothy L. Smith TOWNSEND and TOWNSEND and CREW LLP Two Embarcadero Center, 8 th Floor San Francisco, CA 94111-3834	Direct Telephone Calls to: (Name, reg. no., tele. no.) Timothy L. Smith Reg. No.: 35,367 (415) 576-0200
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NEOSE TECHNOLOGIES, INC.

Date: FEB. 4 2000

By: _____

Name:
Title:

CERTIFICATE UNDER 37 C.F.R. § 3.73(b)Applicant: Shawn DeFrees and Karl JohnsonApplication No.: 09/442,111 Filed: November 17, 1999For: LOW COST MANUFACTURE OF OLIGOSACCHARIDESNeose Technologies, Inc., a Delaware corporation,

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

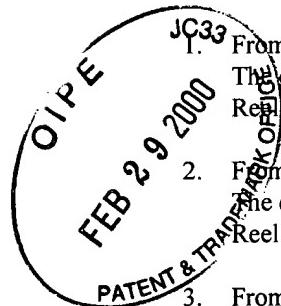
certifies that it is assignee of the patent application identified above by virtue of either:

- A. An assignment from the inventor(s) of the patent application identified above. The assignment was recorded in the Patent and Trademark Office at Reel _____, Frame(s) _____, or for which a copy thereof is attached.

OR

- B. A chain of title from the inventor(s), of the patent application identified above, to the current assignee as shown below:

JC33

 1. From: _____ To: _____ The document was recorded in the Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
2. From: _____ To: _____ The document was recorded in the Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
3. From: _____ To: _____ The document was recorded in the Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

 Additional documents in the chain of title are listed on a supplemental sheet. Copies of assignments or other documents in the chain of title are attached.

The undersigned (whose title is supplied below) is empowered to act on behalf of the assignee.

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements are made with the knowledge that willful false statements, and the like so made, are punishable by fine or imprisonment, or both, under Section 1001, Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 4 Feb 00
 Name: SCOTT
 Title: CEO
 Signature: Scott

ASSIGNMENT OF PATENT APPLICATION

JOINT

WHEREAS, Shawn DeFrees, of 126 Filly Drive, North Wales, Pennsylvania, 19454 and Karl Johnson, of 2941 Windsor Avenue, Willow Grove, Pennsylvania 19090, hereinafter referred to as "Assignors," are the inventor of the invention described and set forth in the below-identified application for United States Letters Patent:

Title of Invention: **LOW COST MANUFACTURE OF OLIGOSACCHARIDES**

Date(s) of execution of Declaration:

Filing Date: **November 17, 1999**

Application No.: **09/442,111 ; and**

WHEREAS, Neose Technologies, Inc., of 102 Witmer Road, Horsham, Pennsylvania, 19044, hereinafter referred to as "ASSIGNEE," is desirous of acquiring an interest in the invention and application and in any U.S. Letters Patent and Registrations which may be granted on the same;

For good and valuable consideration, receipt of which is hereby acknowledged by Assignors, Assignors have assigned, and by these presents do assign to Assignee all right, title and interest in and to the invention and application and to all foreign counterparts (including patent, utility model and industrial designs), and in and to any Letters Patent and Registrations which may hereafter be granted on any patent application claiming priority from the same in the United States and all countries throughout the world, and to claim the priority from the application as provided by the Paris Convention. The right, title and interest is to be held and enjoyed by Assignee and Assignee's successors and assigns as fully and exclusively as it would have been held and enjoyed by Assignor had this Assignment not been made, for the full term of any Letters Patent and Registrations which may be granted thereon, or of any division, renewal, continuation in whole or in part, substitution, conversion, reissue, prolongation or extension thereof.

Assignors further agree that Assignors will, without charge to Assignee, but at Assignee's expense, (a) cooperate with Assignee in the prosecution of U.S. Patent applications and foreign counterparts on the invention and any improvements, (b) execute, verify, acknowledge and deliver all such further papers, including applications and instruments of transfer, and (c) perform such other acts as Assignee lawfully may request to obtain or maintain Letters Patent and Registrations for the invention and improvements in any and all countries, and to vest title thereto in Assignee, or Assignee's successors and assigns.

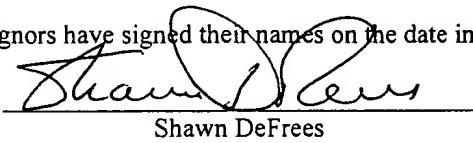
*Exhibit Only —
Not for recordation*

Assignment
Attorney Docket No.: 19957-013820US
Page 2

Assignors hereby authorize and request Townsend and Townsend and Crew LLP, Two Embarcadero Center, 8th Floor, San Francisco, CA 94111-3834, to insert herein above the application number and filing date of said application when known.

IN TESTIMONY WHEREOF, Assignors have signed their names on the date indicated.

Dated: 2/4/00



Shawn DeFrees

PENNSYLVANIA)
STATE OF CALIFORNIA)
) ss.
COUNTY OF MONTGOMERY)

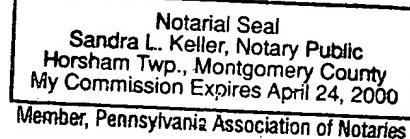
On FEB. 4, 2000, before me, SANDRA KELLER, personally appeared Shawn DeFrees, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument, and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.



NOTARY PUBLIC

My Commission Expires: _____



Assignment
Attorney Docket No.: 19957-013820US
Page 3

Dated: 2/4/00

Karl Johnson
Karl Johnson

PENNSYLVANIA
STATE OF CALIFORNIA)
)
COUNTY OF MONTGOMERY)
ss.

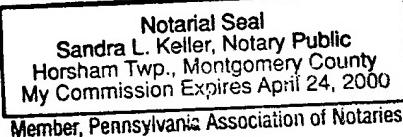
On FEBRUARY 4, 2000, before me, SANDRA KELLER, personally appeared
Karl Johnson personally known to me (or proved to me on the basis of satisfactory evidence)
to be the person whose name is subscribed to the within instrument, and acknowledged to me that he/she executed
the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon
behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.



NOTARY PUBLIC

My Commission Expires: _____



SF 1056152 v1